

Ch 1 Organisations & Data Management

Characteristics of data types, p 22

Elaborate under each of the following data types:

1. **Text, (string)**
This type of field holds a mix of characters (letters, numbers, special characters), also referred to as alphanumeric. It is more efficient to store the values as text rather than as a large numeric value.
2. **Numeric – integer, floating point**
These fields will only allow numbers to be entered. They are often used when the value is to be used in a calculation of some kind.
3. **Date**
Another variation of a numeric data type. The value is normally based on the number of days since the 'zero' day built into the operating system or DMBS.
4. **Character**
A text field that will only accept a single alphanumeric character. Used where there are multiple options for a value, but can be represented with a single character to make data entry easier and to save storage space.
5. **Boolean**
Where the data to be entered falls into the categories of Yes/No, True/False, or even On/Off, the Boolean data type is used.

Databases and database terminology, p 23

1. **What is a database?**
Databases are used to handle a range of data, from personal details to school results and financial transactions.
2. **Explain the relationship between fields, records and tables.**
Each file contains a field with a specific piece of information.
A database record is a set of information about one entity (a person, event or object).
A table is used to hold sets of data.
3. **Explain the purpose of the following objects in a database: forms, queries, reports & macros.**
The result of a query is usually turned into usable information by putting it into a report. A report formats the query data, to make the information easier to read and understand. Queries, forms and reports can all have formula fields to added to perform calculations. Procedures in a database can also be automated to some extent by the use of macros.
4. **What is the purpose of SQL?**
A structured query language is used as a way of standardising how data is managed in databases.
5. **Distinguish between a flat file and a relational database? What are the advantages of using a relational data base?**

Relational databases, p 25

6. **What does RDBMS refer to?**
Relational Database Management System, a software package written specifically to create these databases.
7. **Explain with ex. the following different types of relationships between tables in a relational database.**
 - a. **One-to-one relationship**
Used when a record in one table is connected to only one record in a second table.
Ex. An airline's passenger details table will contain records for many passengers, while a seat allocation table may hold records related to the seats on a particular flight. A one-to-one relationship exists between a passenger and their seat allocation.
 - b. **One-to-many relationship**
Indicates that one record in the first table can be connected to more than one record in a second table.
Ex. Several workers in an office may share a single telephone extension. Each extension record is related to several employee records.
 - c. **Many-to-many-relationship**

Used when each record in the first table can be connected to a number of records in the second table, at the same time, each record in the second table may be related to many records in the first table.

ex. A student detail table and a subject detail may have a many-to-many relationship. Each student studies many subjects, and each subject is studied by many students.

8. What is meant by a foreign key?

A foreign key is a key defined in a second table that refers to a primary key in the first table.

Creating an RDMS structure, p 26

9. Why is it important to consider how to structure the data in a database? What needs to be considered?

The data structure in a database is important, in order to maximise the efficiency in the database system. Fields need to be arranged in a way to limit data redundancy, maintaining data integrity via normalisation.

10. What is the purpose of an entity relationship diagram? (go to p 28 to answer the following).

To establish the interrelationships between different data elements. Once entities have been determined and their attributes identified, an ERD is created to show how the entities relate to each other.

11. What are entities, use an ex. from p 28, and how are they represented?

Entities are things about information which is found, for example, a book.

12. What are the attributes and how are they represented?

Attributes are the details we collect about such entities, for example, the author of a book.

13. How are relationships represented?

Relationships show the linking to draw related data from different entities.

14. What is the difference between the Chen and Bachman models of representing ERD's?

In the Chen model, ERDs use a simple set of symbols, much like a flowchart, compared to the Bachman style which shows the attributes in a table for each entity.